Sertifikaat

REPUBLIC OF SOUTH AFRICA

PATENT KANTOOR
DEPARTEMENT VAN HANDEL
EN NYWERHEID

Certificate

REPUBLIEK VAN SUID-AFRIKA

PATENT OFFICE
DEPARTMENT OF TRADE AND
INDUSTRY

Hiermee word gesertifiseer dat
This is to certify that

the documents annexed hereto are true copies of:

Application forms P.1, P.2, provisional specification and drawings of South African Patent Application **No. 2002/7332** as originally filed in the Republic of South Africa on **12 September 2002** in the name of **NETWIND (PROPRIETARY) LIMITED** and an applicant subsequently substituted to **VICUS WILLIAM SMITH** on 22 August 2003 for an invention entitled:**" A COMPRESSIBLE FLOW MOTOR ".**

Geteken te **PRETORIA** in die Republiek van Suid-Afrika, hierdie 16th dag van January 2004

Signed at in the Republic of South Africa, this day of

Registrar of Patents

FORM P.2
(to be lodged in duplicate)

REPUBLIC OF SOUTH AFRIC **PATENTS ACT, 1978**

REGISTER OF PATENTS

OFFICIAL APPLICATION NO.	LODGING DATE: PROVISIONAL	ACCEPTANCE DATE
21 01 2002/7330	22 12 September 2002	
INTERNATIONAL CLASSIFICATION	LODGING DATE: COMPLETE	GRANTED DATE
51	23	47

FULL NAME(S) OF APPLICANT(S)/PATENTEE(S)

71

~~NETWIND (PROPRIETARY) LIMITED~~

AANSOEKERS VERVANG
APPLICANTS SUBSTITUTED

APPLICANTS SUBSTITUTED	DATE REGISTERED
71 Vicus William Smith	22. 08. 03.

ASSIGNEE(S)	DATE REGISTERED
71	

FULL NAME(S) OF INVENTOR(S)

72

SMITH, Vicus William

PRIORITY CLAIMED	COUNTRY	NUMBER	DATE
N.B. Use International abbreviation for country (See Schedule 4)	33	31	32

TITLE OF INVENTION

54

A COMPRESSIBLE FLOW MOTOR

ADDRESS OF APPLICANT(S)/PATENTEE(S)

Dahilleslot 11~~A~~, STRAND, 7140, Republic of South Africa

ADDRESS FOR SERVICE	A & A REF:
74 ADAMS & ADAMS, Pretoria	V15388

PATENT OF ADDITION TO NO.	DATE OF ANY CHANGE
61	
FRESH APPLICATION BASED ON	DATE OF ANY CHANGE

REPUBLIC OF SOUTH AFRICA
PATENTS ACT, 1978
APPLICATION FOR A PATENT A
ACKNOWLEDGEMENT OF REC
(Section 30(1) Regulation 22)

REPUBLIC OF SOUTH AFRICA REVENUE
12.9.02 R 060.00

FORM P.1
(to be lodged in duplicate)

THE GRANT OF A PATENT IS HEREBY REQUESTED BY THE UNDERMENTIONED APPLICANT ON THE BASIS OF THE PRESENT APPLICATION FILED IN DUPLICATE

A & A REF: V15388

PATENT APPLICATION NO.	
21	01 [redacted]
71	FULL NAME(S) OF APPLICANT(S)

VICUS WILLIAM SMITH
~~NETWIND (PROPRIETARY) LIMITED~~ AANSOEKERS VERVANG
APPLICANTS SUBSTITUTED
22. 08. 03.

ADDRESS(ES) OF APPLICANT(S)

Dahilleslot 11A, STRAND, 7140, Republic of South Africa

54 TITLE OF INVENTION

A COMPRESSIBLE FLOW MOTOR

ONLY THE ITEMS MARKED WITH AN "X" IN THE BLOCKS BELOW ARE APPLICABLE.

- [ ] THE APPLICATION CLAIMS PRIORITY AS SET OUT ON THE ACCOMPANYING FORM P.2
  The earliest priority claimed is Country: No: Date:
- [ ] THE APPLICATION IS FOR A PATENT OF ADDITION TO PATENT APPLICATION NO. |21|01|
- [ ] THIS APPLICATION IS FRESH APPLICATION IN TERMS OF SECTION 37 AND BASED ON APPLICATION NO. |21|01|

THIS APPLICATION IS ACCOMPANIED BY:

- [X] A single copy of a provisional ~~or two copies of a complete~~ specification of 7 pages.
- [X] Drawings of 2 sheet(s).
- [ ] Publication particulars and abstract (Form P.8 in duplicate) (for complete only).
- [ ] A copy of Figure of the drawings (if any) for the abstract (for complete only).
- [X] An assignment of invention.
- [ ] Certified priority document(s) (State quantity):
- [ ] Translation of the priority document(s).
- [ ] An assignment of priority rights.
- [ ] A copy of Form P.2 and the specification of RSA Patent Application No. |21|01|
- [X] A Form P.2 in duplicate.
- [X] A declaration and power of attorney on Form P.3.
- [ ] Request for ante-dating on Form P.4.
- [ ] Request for classification on Form P.9.
- [ ] Request for delay of acceptance on Form P.4.
- [ ]

74 ADDRESS FOR SERVICE: Adams & Adams, Pretoria

DATED THIS 11th DAY OF September 2002

ADAMS & ADAMS
APPLICANTS PATENT ATTORNEYS

The duplicate will be returned to the applicant's address for service as proof of lodging but is not valid unless endorsed with official stamp.

REGISTRAR OF TRADE MARKS RECEIVED

OFFICIAL DATE STAMP
2002 -09- 12

REGISTRATEUR VAN PATENTE, MODELLE, HANDELSMERKE EN OUTEURSREG

REGISTRAR OF PATENTS

A & A REF: V15388

ADAMS & ADAMS
PATENT ATTORNEYS
PRETORIA

FORM P.6

REPUBLIC OF SOUTH AFRICA
Patents Act, 1978

PROVISIONAL SPECIFICATION

(Section 30(1) - Regulation 27)

OFFICIAL APPLICATION NO.
21 01

2002/7332

LODGING DATE
22

12 September 2002

FULL NAME(S) OF APPLICANT(S)
71

29.08.03.
AANSOEKERS VERVANG
APPLICANTS SUBSTITUTED

Vicus William Smith

~~NETWIND (PROPRIETARY) LIMITED~~

FULL NAME(S) OF INVENTOR(S)
72

SMITH, Vicus William

TITLE OF INVENTION
54

A COMPRESSIBLE FLOW MOTOR

2002/7332

THIS INVENTION relates to compressible flow machinery, in particular it relates to a method of rotating a body and to a compressible flow motor.

According to a first aspect of the invention there is provided a method of rotating a body having an axis, said method including the steps of:

providing a flow stream of compressed gas which is off-set from the axis of the body;

impinging a periphery of the body with compressed gas from the flow stream;

filling at least one chamber defined in the body, with the impinging compressed gas;

substantially closing the chamber to hold the compressed gas captive in the chamber;

transferring momentum from the gas held captive, to the body; and

releasing the gas held captive.

The method may include consecutive filling of chambers defined in the periphery of the body, e.g. an array of arcuately spaced chambers defined in a circumference of the body.

The method may include an additional step of transferring the compressed gas from one chamber to another chamber defined in the body. Transfer of the compressed gas from one chamber to another may result in a transfer of momentum from the compressed gas to the body in each of the chambers, consecutively. Transferring the compressed gas may take place along a flow path having a venturi profile. The transfer of compressed gas from one chamber to another may take place after a predetermined arcuate displacement of the body.

According to another aspect of the invention there is provided a compressible flow motor which includes:

a rotatable impeller defining at least one chamber, with an inlet of the chamber defined in a periphery of the impeller;

a nozzle directed to the periphery of the impeller, in an orientation which is off-set from the axis of the impeller, such that rotation of the impeller causes the nozzle and the chamber inlet to be aligned momentarily; and

closing means for substantially closing the chamber inlet.

The closing means may include a stator disposed along the periphery of the impeller such that rotation of the impeller causes each chamber inlet to come into close proximity of the stator, said close proximity being sufficiently close to close the chamber inlet substantially.

The impeller may define a plurality of arcuately spaced chambers in an outer row along its periphery, rotation of the impeller causing each chamber inlet to be aligned with the nozzle, consecutively.

At least one inner row of chambers may be defined in the impeller, radially inwardly from the outer row of chambers, each chamber in the inner row being connectable to a chamber in the outer row. The chambers in the inner row and the outer row may be brought into flow communication by a passage defined in the stator or a passage defined in the impeller. The passage may have a venturi profile.

The stator may be in the form of a casing, which may define an outlet, such that rotation of the impeller causes the outlet and each inlet of chambers in the outer row of chambers, to be aligned momentarily.

The invention will now be described, by way of example, with reference to the accompanying diagrammatic drawings. In the drawings:

Figure 1 shows a sectional axial view of a compressible flow motor in accordance with the invention; and

Figure 2 shows a three-dimensional view of an impeller of the motor of Figure 1.

Referring to Figure 1 of the drawings, a compressible flow motor in accordance with the invention is generally indicated by reference numeral 10.

The motor 10 includes a rotatable body in the form of an impeller 12 and a stator in the form of a casing 14.

A nozzle 16 is attached to the casing 14 in an orientation which is off-set from an axis 18 of the impeller 12. An outlet 19 is defined in the casing 14.

An outer row of chambers 20 are defined in the impeller 12, each chamber 20 having a tear drop shape and having an opening in the form of a circumferential slot 22 defined on a circumference of the impeller 12. An inner row of chambers 24 is defined in the impeller, each chamber 24 having a tear drop shape and being connected to an associated chamber 20 of the outer row, by a passage 26. Similarly, a further row of chambers 28 are defined radially inwardly from the chambers 24 and are connected to the chambers 24 by passages 30.

Bypass passages 32 are defined in the casing 14, each bypass passage 32 extending in a circumferential direction, such that each bypass passage 32 is in flow communication with one or two slots 22 of the chambers 20.

The impeller 12 is made of a light weight material, e.g. aluminium, and is manufactured in two axially spaced halves from which material is removed to form the chambers 20, 24, 28, passages 26, 30, and slots 22.

The nozzles 16 and the outlet 19 are disposed such that rotation of the impeller 12 causes the slots 22 to be momentarily aligned with the nozzle 16 or the outlet 19.

In use, a compressed gas is supplied to the motor 10 via the nozzle 16. The compressed gas flows through a slot 22 into a chamber 20 of the outer row, through a passage 26 to a chamber 24 in the inner row, and through a passage 30 into a chamber 28 of the further row. Linear momentum of the compressed gas flowing in the nozzle 16 is thereby transferred to the impeller 12, causing the impeller 12 to rotate in a direction 34 of rotation.

Rotation of the impeller 12 causes the slot 22 associated with the chamber 20 which has been filled with compressed gas to move arcuately in the direction 34 from a position where the slot 22 is in flow communication with the nozzle 16, to a position where it is in close proximity of about 0,01mm, with the casing 14, substantially closing the slot 22.

Further rotation of the impeller 12 causes the slot 22 of the chamber 20 to come into flow communication with the slot 22 of an adjacent chamber 20, via a bypass passage 32, allowing compressed gas to pass from one chamber 20 to an adjacent chamber 20 in the direction 34. Continued rotation of the impeller 12 causes each of the slots 22 to be momentarily aligned with the outlet 19, allowing compressed gas in the chamber 22 to flow out of the motor 10 via the outlet 19.

DATED THIS 11TH DAY OF SEPTEMBER 2002

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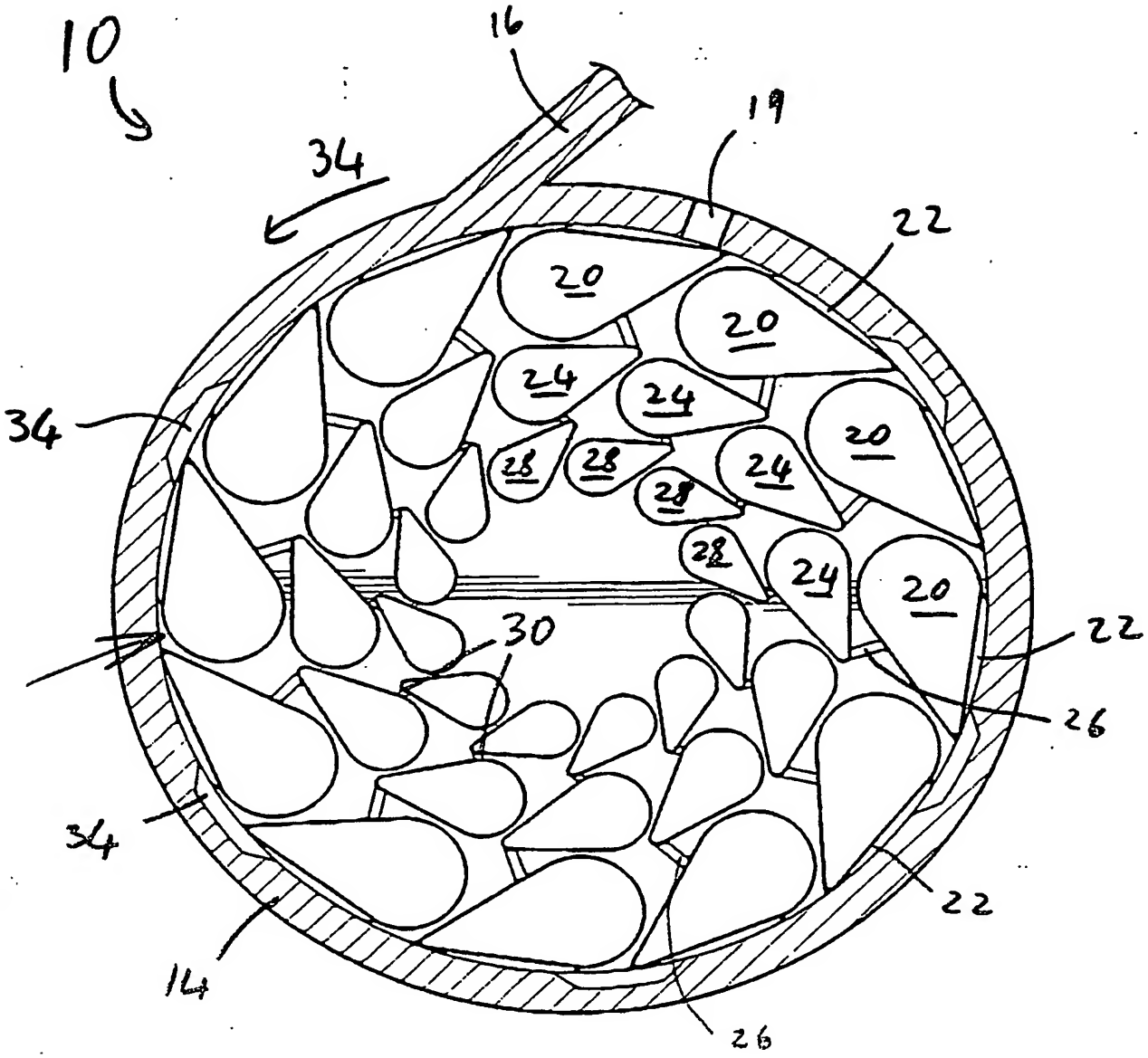

Figure 1

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APPLICANTS PATENT ATTORNEYS

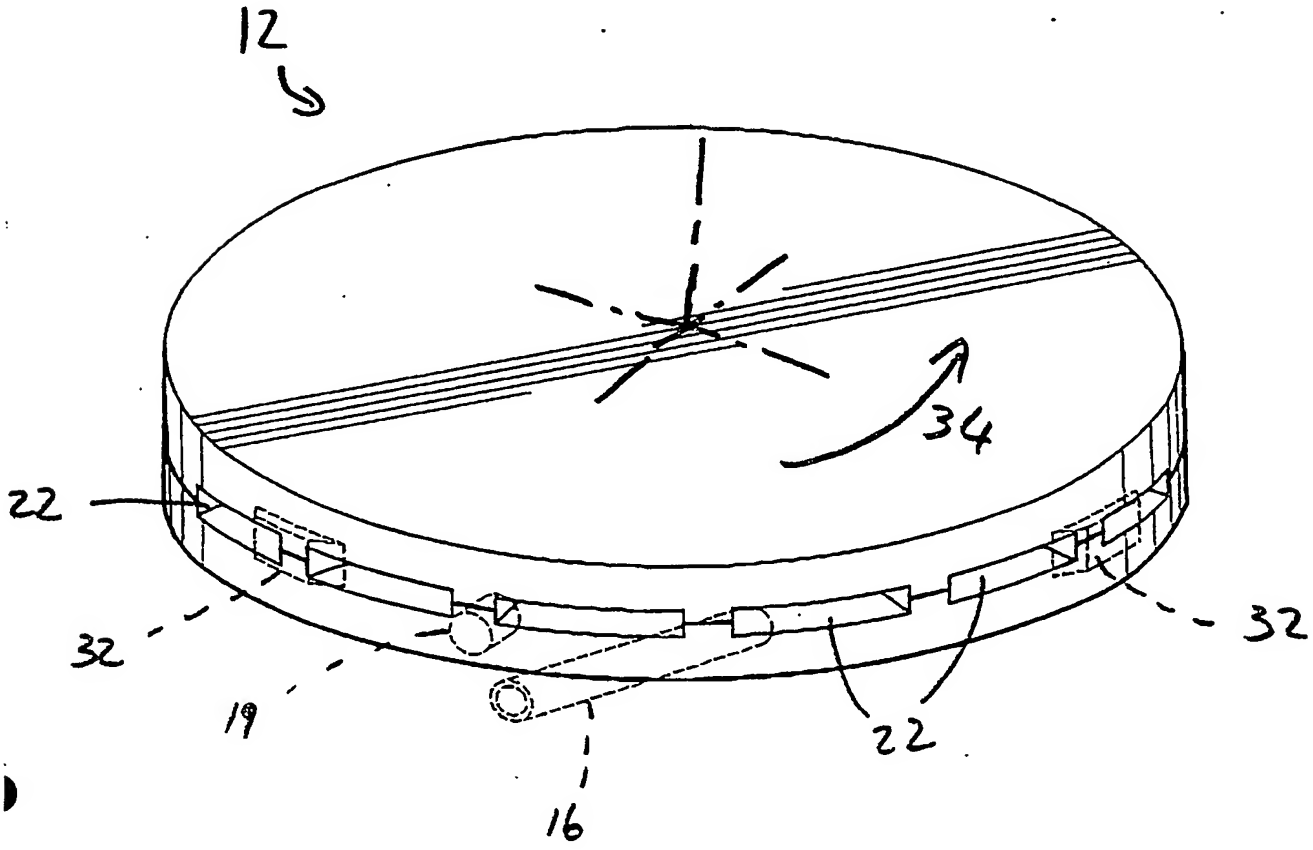

Figure 2

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